

Attorney Docket No.: 108-127USAND0

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Continuation Application of:

Applicants : Constantine Tsikos  
Application Serial No.: 09/954,477  
Filing Date : September 17, 2001

Honorable Commissioner  
of Patents and Trademarks  
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Sir:

Prior to examination of the above-referenced Patent Application, please amend the same as follows:

AMENDMENT OF THE TITLE TO INVENTION

Please amend the Title To Invention as follows:

--BIOPTICAL PRODUCT AND PRODUCE IDENTIFICATION SYSTEMS EMPLOYING  
PLANAR LASER ILLUMINATIONN AND IMAGING (PLIIM) BASED SUBSYSTEMS--.

AMENDMENT OF THE SPECIFICATION

Please amend the Specification as follows:

On Page 1, please amend the "Related Cases" as follows:

This is a Continuation of Application No. 09/954,477 filed September 17, 2001, which is a Continuation-in-Part of: [copending Application Serial No. 09/883,130 entitled filed June 15, 2001, which is a Continuation-in-Part of Application No. 09/781,665 filed February 12, 2001; copending Application Serial No. 09/780,027 filed February 9, 2001;] copending Application Serial No. 09/721,885 filed November 24, 2000; [International Application PCT/US99/06505 filed March 24, 1999, published as WIPO WO 99/49411; International Application PCT/US99/28530 filed December 2, 1999, published as WIPO Publication WO 00/33239;] [International Application PCT/US00/15624 filed June 7, 2000, published as WIPO Publication WO 00/75856;] copending Application Serial No. 09/452,976 filed December 2, 1999;]

Application Serial No. 09/327,756 filed June 7, 1999[, which is a Continuation-in-Part of Application Serial No. 09/305,896 filed May 5, 1999, which is a Continuation-in-Part of copending Application No. 09/275,518 filed March 24, 1999, which is a Continuation-in-Part of copending Application Nos.: 09/274,265 filed March 22, 1999; 09/243,078 filed February 2, 1999; 09/241,930 filed February 2, 1999; 09/157,778 filed September 21, 1998; 09/047,146 filed March 24, 1998, 08/949,915 filed October 14, 1997, now U.S. Letters Patent 6,158,659; 08/854,832 filed May 12, 1997, now U.S. Letters Patent 6,085,978; 08/886,806 filed April 22, 1997, now U.S. Letters Patent 5,984,185; 08/726,522 filed October 7, 1996, now U.S. Letters Patent 6,073,846; 08/573,949 filed December 18, 1995, now abandoned]; each said application being commonly owned by Assignee, Metrologic Instruments, Inc., of Blackwood, New Jersey, and incorporated herein by reference as if fully set forth herein.

#### AMENDMENT OF THE CLAIMS TO INVENTION

Please cancel Claims 1-262 without prejudice or disclaimer and add Claims 263-272 as follows:

--263. A bioptical system which comprises:

a housing having bottom portion and side portion;

bottom and side light transmission apertures formed in bottom and side portions, respectively;

a first imaging window mounted over said first light transmission aperture, and a second light transmission aperture mounted over said second light transmission aperture;

a bottom PLIIM-based subsystem mounted within said bottom portion of the housing, and producing and projecting a first planar coplanar laser illumination beam (PLIB)/field of view (FOV) through said first light transmission aperture and said first imaging window;

a side PLIIM-based subsystem mounted within said side portion of the housing, and producing and projecting a second planar coplanar laser illumination beam (PLIB)/field of view (FOV) through said second light transmission aperture and said second imaging window;

an electronic product weight scale operably connected to said bottom PLIIM-based subsystem; and

a local data communication network mounted within the housing, and establishing a high-speed data communication link between said bottom and side PLIIM-based subsystems and said electronic weight scale.--

--264. The bioptical PLIIM-based system of claim 263, wherein each PLIIM-based subsystem comprises:

- a plurality of visible laser diodes (VLDs) having different color producing wavelengths to produce a multi-spectral planar laser illumination beam (PLIB) from the side and bottom imaging windows; and

- a linear electronic image detection array for capturing color images of objects (e.g. produce) as the objects are manually transported past said first and second imaging windows of said bioptical PLIIM-based system, along the direction of an indicator arrow, by the user or operator of the system.--

--265. The bioptical PLIIM-based system of claim 263, wherein said PLIIM-based subsystem installed within said bottom portion of the housing, projects an automatically swept PLIB and a stationary 3-D FOV through said bottom light transmission window.--

--266. The bioptical PLIIM-based system of claim 263, wherein each PLIIM-based subsystem comprises:

- a plurality of visible laser diodes (VLDs) having different color producing wavelengths to produce a multi-spectral planar laser illumination beam (PLIB) from said side and bottom imaging windows; and

- an area-type electronic image detection array for capturing color images of objects (e.g. produce) as the objects are presented to the imaging windows of the bioptical system by the user or operator of the system.--

--267. A bioptical PLIIM-based product dimensioning, analysis and identification system comprising:

- a housing having bottom portion and side portion;

- bottom and side light transmission apertures formed in bottom and side portions, respectively;

- a first imaging window mounted over said first light transmission aperture, and a second light transmission aperture mounted over said second light transmission aperture;

- a bottom PLIIM-based subsystem mounted within said bottom portion of the housing, and employing (i) a first linear array visible laser diodes (VLDs) having different color producing wavelengths so as to produce and project a first multi-spectral planar laser illumination beam (PLIB) through said first light transmission aperture and said first imaging window, and (ii) a first linear electronic image detection array having image formation optics

with a first field of view (FOV) that is aligned with said first PLIB in a coplanar relationship so as to capture images of products being moved past said first imaging window; and

a side PLIIM-based subsystem mounted within said side portion of the housing, and employing a second linear array of visible laser diodes (VLDs) having different color producing wavelengths so as to produce and project a second multi-spectral planar laser illumination beam (PLIB) through said second light transmission aperture and said second imaging window, and a second linear electronic image detection array having image formation optics with a second field of view (FOV) that is aligned with said second PLIB in a coplanar relationship so as to capture images of objects products being moved past said second imaging window.--

--268. A bioptical PLIIM-based product dimensioning, analysis and identification system comprising:

a housing having bottom portion and side portion;

bottom and side light transmission apertures formed in bottom and side portions, respectively;

a first imaging window mounted over said first light transmission aperture, and a second light transmission aperture mounted over said second light transmission aperture;

a bottom PLIIM-based subsystem mounted within said bottom portion of the housing, and employing (i) a first linear array visible laser diodes (VLDs) having different color producing wavelengths so as to produce and project a first multi-spectral planar laser illumination beam (PLIB) through said first light transmission aperture and said first imaging window, and (ii) a first area-type electronic image detection array having image formation optics with a first 3-D field of view (FOV), through which said first PLIB is automatically swepted in a coplanar relationship with at least a portion of said first 3-D FOV so as to capture images of products being moved past said first imaging window; and

a side PLIIM-based subsystem mounted within said side portion of the housing, and employing (i) a second linear array visible laser diodes (VLDs) having different color producing wavelengths so as to produce and project a second multi-spectral planar laser illumination beam (PLIB) through said second light transmission aperture and said second imaging window, and (ii) a second area-type electronic image detection array having image formation optics with a second 3-D field of view (FOV), through which said first PLIB is automatically swepted in a coplanar relationship with at least a portion of said 3-D FOV so as to capture images of products being moved past said first imaging window.--

--269. A bioptical PLIIM-based product dimensioning, analysis and identification system comprising:



REQUIREMENT UNDER 37 C.F.R. 1.121

As required under 37 C.F.R. 1.121 a clean version of the first paragraph of Page 1 of the Specification is as follows:

This is a Continuation of Application No. 09/954,477 filed September 17, 2001, which is a Continuation-in-Part of: copending Application Serial No. 09/721,885 filed November 24, 2000; International Application PCT/US00/15624 filed June 7, 2000, published as WIPO Publication WO 00/75856; Application Serial No. 09/327,756 filed June 7, 1999; each said application being commonly owned by Assignee, Metrologic Instruments, Inc., of Blackwood, New Jersey, and incorporated herein by reference as if fully set forth herein.

Also as required under 37 C.F.R. 1.121, a clean set of the amended Claims is as follows:

263. A bioptical system which comprises:

- a housing having bottom portion and side portion;
- bottom and side light transmission apertures formed in bottom and side portions, respectively;
- a first imaging window mounted over said first light transmission aperture, and a second light transmission aperture mounted over said second light transmission aperture;
- a bottom PLIIM-based subsystem mounted within said bottom portion of the housing, and producing and projecting a first planar coplanar laser illumination beam (PLIB)/field of view (FOV) through said first light transmission aperture and said first imaging window;
- a side PLIIM-based subsystem mounted within said side portion of the housing, and producing and projecting a second planar coplanar laser illumination beam (PLIB)/field of view (FOV) through said second light transmission aperture and said second imaging window;
- an electronic product weight scale operably connected to said bottom PLIIM-based subsystem; and
- a local data communication network mounted within the housing, and establishing a high-speed data communication link between said bottom and side PLIIM-based subsystems and said electronic weight scale.

264. The bioptical PLIIM-based system of claim 263, wherein each PLIIM-based subsystem comprises:

- a plurality of visible laser diodes (VLDs) having different color producing wavelengths to produce a multi-spectral planar laser illumination beam (PLIB) from the side and bottom imaging windows; and
- a linear electronic image detection array for capturing color images of objects (e.g. produce) as the objects are manually transported past said first and second imaging windows of said bioptical PLIIM-based system, along the direction of an indicator arrow, by the user or operator of the system.

265. The bioptical PLIIM-based system of claim 263, wherein said PLIIM-based subsystem installed within said bottom portion of the housing, projects an automatically swept PLIB and a stationary 3-D FOV through said bottom light transmission window.

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266. The bioptical PLIIM-based system of claim 263, wherein each PLIIM-based subsystem comprises:

- a plurality of visible laser diodes (VLDs) having different color producing wavelengths to produce a multi-spectral planar laser illumination beam (PLIB) from said side and bottom imaging windows; and

- an area-type electronic image detection array for capturing color images of objects (e.g. produce) as the objects are presented to the imaging windows of the bioptical system by the user or operator of the system.

267. A bioptical PLIIM-based product dimensioning, analysis and identification system comprising:

- a housing having bottom portion and side portion;

- bottom and side light transmission apertures formed in bottom and side portions, respectively;

- a first imaging window mounted over said first light transmission aperture, and a second light transmission aperture mounted over said second light transmission aperture;

- a bottom PLIIM-based subsystem mounted within said bottom portion of the housing, and employing (i) a first linear array visible laser diodes (VLDs) having different color producing wavelengths so as to produce and project a first multi-spectral planar laser illumination beam (PLIB) through said first light transmission aperture and said first imaging window, and (ii) a first linear electronic image detection array having image formation optics with a first field of view (FOV) that is aligned with said first PLIB in a coplanar relationship so as to capture images of products being moved past said first imaging window; and

- a side PLIIM-based subsystem mounted within said side portion of the housing, and employing a second linear array of visible laser diodes (VLDs) having different color producing wavelengths so as to produce and project a second multi-spectral planar laser illumination beam (PLIB) through said second light transmission aperture and said second imaging window, and a second linear electronic image detection array having image formation optics with a second field of view (FOV) that is aligned with said second PLIB in a coplanar relationship so as to capture images of objects products being moved past said second imaging window.

268. A bioptical PLIIM-based product dimensioning, analysis and identification system comprising:

- a housing having bottom portion and side portion;

- bottom and side light transmission apertures formed in bottom and side portions, respectively;



a first imaging window mounted over said first light transmission aperture, and a second light transmission aperture mounted over said second light transmission aperture;

a bottom PLIIM-based subsystem mounted within said bottom portion of the housing, and employing (i) a first linear array visible laser diodes (VLDs) having different color producing wavelengths so as to produce and project a first multi-spectral planar laser illumination beam (PLIB) through said first light transmission aperture and said first imaging window, and (ii) a first area-type electronic image detection array having image formation optics with a first 3-D field of view (FOV), through which said first PLIB is automatically swepted in a coplanar relationship with at least a portion of said first 3-D FOV so as to capture images of products being moved past said first imaging window; and

a side PLIIM-based subsystem mounted within said side portion of the housing, and employing (i) a second linear array visible laser diodes (VLDs) having different color producing wavelengths so as to produce and project a second multi-spectral planar laser illumination beam (PLIB) through said second light transmission aperture and said second imaging window, and (ii) a second area-type electronic image detection array having image formation optics with a second 3-D field of view (FOV), through which said first PLIB is automatically swepted in a coplanar relationship with at least a portion of said 3-D FOV so as to capture images of products being moved past said first imaging window.

269. A bioptical PLIIM-based product dimensioning, analysis and identification system comprising:

a pair of PLIIM-based object identification and attribute acquisition subsystems, wherein each PLIIM-based object identification and attribute acquisition subsystem produces a multi-spectral planar laser illumination beam (PLIB) for illuminating objects during imaging, and employs a linear electronic image detection array with image formation optics having a field of view (FOV) that is coplanar with said PLIB; and

wherein said PLIIM-based object identification and attribute acquisition subsystem is programmed to analyze captured images of objects and determine the shape/geometry, dimensions and/or color thereof.

270. A bioptical PLIIM-based product dimensioning, analysis and identification system comprising: a pair of PLIIM-based object identification and attribute acquisition subsystems,

wherein each PLIIM-based object identification and attribute acquisition subsystem produces a multi-spectral planar laser illumination beam (PLIB) for illuminating objects during imaging, and employs an area-type electronic image detection array with image formation optics

having a field of view (FOV), through which said PLIB is automatically swept in a coplanar relationship during illumination and imaging operations; and

wherein said PLIIM-based object identification and attribute acquisition subsystem is programmed to analyze captured images of objects and determine the shape/geometry, dimensions and/or color thereof.

271. A bioptical PLIM-based product dimensioning, analysis and identification system comprising a pair of PLIIM-based package identification and dimensioning subsystems, wherein each subsystem employs a 2-D electronic image detection array and is programmed to analyze captured images of objects and determine the shape/geometry, dimensions and/or color thereof.


272. A bioptical PLIIM-based product identification, dimensioning and analysis (PIDA) system comprising a pair of PLIIM-based package identification systems arranged within a compact POS housing having bottom and side light transmission apertures, located beneath a pair of spatially-isolated imaging windows.

REMARKS

The Commissioner is authorized to charge any fee deficiencies to Deposit Account No. 16-1340. A duplicate of this document is enclosed herewith.

Respectfully submitted,

Dated: February 6, 2002

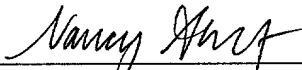
  
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